Notes.

Prof. C. J. Martin, F.R.S., director of the Lister Institute of Preventive Medicine; Sir William Orpen, K.B.E.; and Sir J. E. Petavel, K.B.E., F.R.S., director of the National Physical Laboratory, have been elected members of the Athenæum Club under the provisions of the rule of the club which empowers the annual election by the committee of a certain number of persons "of distinguished eminence in science, literature, the arts, or for public service."

The Royal Danish Society of Science has elected Sir Ernest Rutherford and Sir Joseph Thomson as fellows in the physical and mathematical class, and Sir George Grierson and Prof. W. M. Lindsay fellows in the historical and philosophical class.

Dr. A. McWilliam, formerly assistant professor of metallurgy in the University of Sheffield, and now a consultant metallurgist in that city, was invested by the King with the Order of C.B.E. on March 20. This honour was conferred upon him for his general war work in India, principally in connection with the supply of steel for war purposes.

As already announced, the Geological Survey and the Museum of Practical Geology were transferred from the Board of Education to the Department of Scientific and Industrial Research on November 1 last. The Lord President has now appointed a Geological Survey Board for the management of the work of the Survey and museum, and to submit from time to time recommendations on developments that appear to be necessary as the work progresses. The Board, as at present constituted, consists of Sir Francis G. Ogilvie (chairman), Prof. W. S. Boulton, Prof. J. W. Gregory, Dr. John Horne, Prof. J. E. Marr, Mr. Frank Merricks, and Mr. W. Russell.

Sir Henry Howorth has presented to the Geological Department of the British Museum (Natural History) the collection of mammalian and other remains obtained by Mr. W. J. Lewis Abbott from a fissure near Ightham, Kent. This collection is especially important on account of the care with which the bones of the small animals were extricated and preserved. The ordinary larger specimens belong to the woolly rhinoceros, mammoth, reindeer, stag, roebuck, horse, and hyena, and show that the greater part of the fauna at least dates back to the latter part of the Pleistocene period. All the circumstances of the discovery were discussed by Messrs. Abbott and E. T. Newton in the Geological Society's Quarterly Journal in 1894.

Dr. Carlos Ameghino, director of the Argentine National Museum, announces that he has recently discovered the oldest known remains of man at Miramar, near Mar del Plata, on the coast of the province of Buenos Aires. Human remains were found in the same district several years ago in association with stone implements and with bones of the extinct Toxodon and ground-sloths; but according to the observations of Dr. Aleš Hrdlička and Dr. Bailey Willis (Smithsonian Institution, Bureau of American Ethnology, Bulletin 52, 1912), they are of no great antiquity, and probably represent a modern South American race. All the supposed discoveries of early man in America have hitherto proved unsatisfactory, and Dr. Ameghino's detailed report on the latest find will be awaited with interest.

Capt. Vaughan-Williams, who is excavating the supposed site of Edward the Confessor's palace in Windsor Great Park, has discovered what is believed to be the dedication-stone of a Saxon place of worship. Upon the stone are the marks of a cross and what looks like Saxon lettering. Among other discoveries are the remains of a kitchen and banqueting-hall and the traces of what seem to be Roman baths. This confirms the statement of Mr. Forestier that the palace of the Saxon king was built upon the site of a Roman villa, which was provided, as usual, with a series of baths. The remains of the chapel indicate that it was 40 ft. long, and, according to Bishop Browne, who recently inspected it, it contained an altar for the worship of God, and one smaller for the worship of devils.

Nineteen years ago the splendid survivor of the Great Trilithon at Stonehenge was in a very dangerous condition, but it was set upright again, and now the Office of Works, in association with the Society of Antiquaries, is engaged in restoring to a position of safety other stones that are in danger. A question of interest has been raised during the work now in progress. Just inside the Ditch a circle of holes has been discovered in the chalk, which mark the site of an outer circle of stones. In these holes have been found charred human bones, bits of burnt animals' bones, or only a single tine of a stag's horn. Aubrey's map, made in 1666, showed in approximately the position of these newly found holes a series of depressions in the turf which have since then disappeared. In one was shown a stone which has since been removed. The detached stone, well known as the "Slaughtering Stone," which lies in line with the "Hele Stone," appears to fit almost exactly into place in this new circle. Whether it is the last survivor of an outer circle of stones, and whether this outer ring was coeval with Avebury and made before Stonehenge itself existed—these are questions which cannot now be answered until further excavations help to solve the problem.

The James Forrest lecture for the present year will be delivered at the Institution of Civil Engineers by Sir Dugald Clerk at 5.30 on Tuesday, April 20. The subject will be "Fuel Conservation in the United Kingdom."

The fourth Guthrie lecture of the Physical Society of London will be delivered on Friday, April 23, at 5 o'clock, by M. C. E. Guillaume, who will take as his subject "The Anomaly of the Nickel-Iron Alloys: Its Causes and its Applications."

Sir George Newman will deliver the Lady Priestley memorial lecture of the National Health Society on Thursday, April 22, at the Royal Society of Medicine.

His subject will be "Preventive Medicine: The Importance of an Educated Public Opinion."

THE Wilbur Wright lecture of the Royal Aeronautical Society for the present year will be delivered on Tuesday, June 22, at the Central Hall, Westminster, by Comdr. J. C. Hunsaker, U.S.N., who will take as his subject "Naval Architecture in Aeronautics."

UNDER the auspices of the National Union of Scientific Workers a public meeting, presided over by Mr. H. G. Wells, is to be held at 8 o'clock on Wednesday, April 28, in the lecture-theatre of Birkbeck College, Breams Buildings, E.C.4, addressed by Prof. F. Soddy on "The Public Support of Scientific Research." The address will be followed by a discussion.

THE Scottish Shale Oil Scientific and Industrial Research Association has been approved by the Department of Scientific and Industrial Research as complying with the conditions laid down in the Government scheme for the encouragement of industrial research. The association may be approached through Mr. W. Fraser, C.B.E., Scottish Oils, Ltd., 135 Buchanan Street, Glasgow.

A COMMUNICATION has been received from the Decimal Association criticising the recent report of the Royal Commission on Decimal Coinage. The association maintains that the report cannot be accepted as final for the following reasons, among others:—The Commission ignores the fact that eleven of our Colonies or Dependencies have already adopted decimal coinage, and that our non-decimal Dominions have repeatedly advocated the establishment of the decimal principle in currency. Further, the report exaggerates the difficulties which would be caused by the abolition of the penny, and takes no account of the altered and daily decreasing purchasing power of that coin. The Decimal Association considers that the first minority report represents the actual opinion of the community, and that the decision given in the main report is short-sighted and unpopular. For these reasons the association intends to persist with its active propaganda in favour of the reform.

IN *Ancient Egypt* (part i., 1920) Prof. Flinders Petrie describes the hoard of personal ornaments found some ten years ago at Antinoe, in Upper Egypt. Unfortunately, the hoard was not preserved intact, and the valuables are now scattered in London, Berlin, Detroit, and the Pierpont Morgan collection. The greater part of the treasure, now described by Dr. Dennison, is dated by coins to the time between Justinian and Mauricius Tiberius, the latter half of the sixth century. The finest object is a great necklet with fourteen inserted coins from Theodosius to Justinian, and a barbaric imitation of a gold coin of Valentinian III. as a centre-piece, the taste for making imitations of coins for ornament being familiar in North Europe. Prof. Petrie attributes the dispersal of the collection to the present Egyptian law of treasure-trove. If the Government would pay, as dealers do, the local prices, collections could be purchased much below the value in Europe, and the profit would go to the State, not to the dealer.

THE probability of the Norse discovery of Spitsbergen before the voyage of Barents in 1596 is the subject of an article by Dr. F. Nansen in *Naturen* for January–February, 1920. It has long been a matter for discussion whether the Svalbard of the Icelandic annals was Spitsbergen, and the weight of evidence favours the belief that it was. Dr. Nansen reproduces an Icelandic map published in the sixteenth century, before Barents's discovery, which certainly suggests that Svalbard was the coast of Spitsbergen. At the same time, it does not preclude the possibility of its identification with north-eastern Greenland; but this explanation is improbable, in view of the courses given for reaching Svalbard from Iceland. Dr. Nansen believes that the Norsemen found Svalbard by chance, some vessel having been driven out of its course by a gale. He thinks that the greater attraction of the fisheries on the coast of Norway, particularly the Lofoten Islands, diverted attention from Svalbard, which was eventually forgotten. There is no evidence whatever that Barents made any use of Norwegian knowledge in his voyage in 1596. The article contains a good reproduction of the map known as Barents's chart, published in 1599 by Cornelius Claesz.

A WELL-KNOWN and much-advertised institute of mind-training has sent us particulars of a laboratory of applied psychology which it has organised and equipped. For a specified fee the laboratory, it is stated, "will enable those who need vocational guidance to discover with scientific accuracy their strong and weak points, and to obtain expert advice on the choice of a career. . . . Those living at a distance can have tests forwarded by post." Vocational psychology is the youngest branch of the youngest of the sciences; it is not ten years since the publication of the well-known books by Taylor and by Münsterberg upon industrial psychology and so-called scientific management. Many, therefore, will doubt whether any laboratory can yet state the vocational qualifications of a given individual "with scientific accuracy" either by post or otherwise, much less whether an institute organised for profit is the proper place for such investigations. At the same time the new venture is a striking testimony to the advance made by psychology, both during and since the war, into fields of practical application; and, clearly and ably written as they are, the two pamphlets issued by the new laboratory, on "Choosing a Vocation" and on "Choosing Employees," may do useful service in acquainting both employers and applicants for employment with the possibility of scientific method in vocational guidance, and with the probability that, when established by disinterested research, such methods will be as superior to the current methods of personal preference or of phrenological advice as the prescriptions of a properly qualified medical specialist are superior to the pills of a wise grandmother or the potions of a local herbalist.

WE have on several occasions referred to articles in the *Cologne Post*—a daily paper published by the

Army of the Rhine—on educational institutions and work connected with the Army of Occupation. The first number appeared on March 31, 1919, and a copy of the anniversary issue reached us a few days ago. The journal has been most successful, and is exerting a very valuable influence in revealing British thought and spirit to Germany. It has a large circle of German readers, and is used in many schools for reading lessons and the study of English. "Here," says an editorial article in the anniversary number, "in this great German city we bide, facing a wonderful land torn with dissensions after the mightiest conflict of all time; we of the *Cologne Post*—a little band of soldier scribes—and, never forgetting the ravaged west which lies behind us, we are facing east, where the sun rises." To the staff which is thus promoting a better understanding between two peoples we offer our most cordial congratulations upon the success of their faithful and intelligent work. It is particularly appropriate that we should associate ourselves with other good wishers in this expression, because Capt. W. E. Rolston, the editor and manager of the *Cologne Post,* was, before the war, a constant contributor to our columns. He was formerly an assistant to Sir Norman Lockyer in the Solar Physics Observatory at South Kensington, and when the observatory was transferred to Cambridge he went with it. For several years he wrote the whole of the notes in Our Astronomical Column, and also contributed numerous articles and reviews. Capt. Rolston provides another example of the value of a scientific training to business management and literary balance, and his devoted attention to what is really a unique newspaper merits the fullest official recognition.

In a study of the colour and markings of pedigree Hereford cattle (*Journal of Genetics,* vol. ix., No. 3) Miss F. Pitt finds that the breed arose by selection from the nondescript cattle of the county during the seventeenth and early eighteenth centuries. All sorts of colours and markings prevailed, but among them the red with white face, which is still characteristic of the breed, was most common. This pattern probably originated through a mutation which appeared in a dark herd in 1750, and was kept and bred from as a curiosity. The white face is a dominant condition, while excessive white in modern Herefords is found to be recessive to the typical pigmentation. Variations from type which now occur in the breed are due to the outcrop of recessive characters inherited from the time before pattern selection was practised.

CONSIDERABLE foliage injury is reported in Michigan owing to the substitution of calcium and magnesium arsenates for lead arsenate for spraying purposes. The Quarterly Bulletin of the Michigan Agricultural College Experiment Station (vol. ii., No. 2, November, 1919) reports interesting tests carried out to discover the reasons for this injury. Plants in respiring give out considerable quantities of carbon dioxide, with which the film of moisture on the leaves is presumably charged. The tests show that calcium and magnesium arsenates are very much more soluble in carbonated water than in pure water, while for lead arsenate the reverse is true. It seems, therefore, that this solubility of calcium and magnesium arsenates in carbon dioxide is the cause of the foliage injury occurring in fruit-trees sprayed with these materials. It is suggested that the addition of lime to the spray mixture may prevent the injury, but this suggestion awaits proof.

As the result of comprehensive tests carried out by the New South Wales Department of Agriculture on two of their experimental farms, it is claimed that a more satisfactory method has been found of treating seed-wheat for bunt than by pickling in a bluestone solution. According to *Science and Industry* (Australia), carbonate of copper gives the best results, as has been shown after many years of experimenting with other substances. The method which the investigators recommend is to dust dry copper carbonate through the grain at the rate of 2 oz. of the fungicide to one bushel of wheat. Substantial increases in the yield per acre were obtained in comparison with pickled seed, while other advantages which the new process possesses over established practice are said to be that (1) no water is necessary; (2) no injurious effect is caused to either the grain or the young plant, as is the case with bluestone pickling; (3) seed-wheat can be treated weeks before it is sown; (4) no damage is done to the grain if it should lie in a dry seed-bed for weeks without germinating; (5) better germination is obtained; and (6) the process is quicker and less laborious than wet pickling.

AN Official Guide has been issued (143 pages, price 2*s.*) to the Museum of British Forestry (Museum No. 4) at the Royal Botanic Gardens, Kew. This museum, which was opened in 1910, occupies Cambridge Cottage, formerly the residence of the Duke of Cambridge. The term "forestry" is more correctly used as synonymous with sylviculture—that is, for trees and shrubs that are grown for commercial purposes—the term "arboriculture" being used for trees and shrubs that are grown as specimen plants or for purely ornamental work. The objects in view in the production of the two types of trees are very different, and the mature specimens differ in appearance. The scope of the museum is at present limited to collections of timber, fruits and seeds of trees, dried specimens of a few types of hardy trees and shrubs, photographs of isolated trees and plantations, the fungus- and insect-diseases of trees, articles manufactured from British-grown timber, and tools and machinery used in sylvicultural and arboricultural operations. In most instances the specimens shown have been grown, manufactured, or collected in the British Isles. Room No. 3 contains a series of special interest to the student, and illustrates the trees and shrubs native to or planted in Great Britain, with a brief account of their economic uses; the arrangement is according to the natural families. Injuries to trees caused by various agencies—animals, parasitic or climbing plants, fungi, and insects—are also illustrated in detail. Apart from its service as a guide to the museum, the booklet contains much useful information on our British-grown trees and their economic value.

ATTENTION may be usefully directed to the high grade of Indian bauxites now under development, as represented by analyses given by Dr. L. L. Fermor in his article on "The Mineral Resources of the Central Provinces" (Rec. Geol. Surv. India, vol. l., p. 273, 1919).

DR. HOLTEDAHL's interesting maps and discussion of the distribution of land and water in the North Atlantic region in Palæozoic times (see NATURE, vol. ciii., p. 433) have been reproduced for readers of English in the *American Journal of Science* for January (vol. xlix., p. 1). Some corrections have been noted in the separate copies sent out by the author, the most important being the accidental exchange of the titles of Figs. 9 and 11, which should be rectified by those who may use them in their reissued form.

IN a paper on "Old Age and Extinction in Fossils" (Proc. Geol. Assoc., vol. xxx., p. 102, 1919) Dr. W. D. Lang directs attention to the reluctance—perhaps better called indifference—of the female to the reception of the male animal, as exhibited, for instance, by mosquitoes, as a possible cause of extinction of a group. He applies this possibility to the ammonites; but his main thesis is that extinction may result from exaggeration of a structure on the removal of an inhibiting influence. Environment may thus be effective, but the tendency in the organism is, on the whole, superior to external influences in affecting evolution and decadence. The increase in deposition of calcium carbonate in the Cretaceous cheilostomata, and the "exhaustion of their ancestral potentialities" in the case of the rugose corals, are utilised as examples in a discussion that would obviously bear expansion.

SCIENTIFIC Paper No. 363 of the Bureau of Standards (Washington) just to hand deals with the manner of preparation and determination of the spectral reflective properties of certain alloys of aluminium with magnesium and with zinc by R. G. Waltenberg and W. W. Coblentz. The investigators found that all these alloys tarnish in time, and hence are not suitable for mirrors where permanency is of the first importance. The compound of aluminium and magnesium, Al_3Mg_4, deteriorates less rapidly than any of the other alloys examined, and could be used in apparatus where a highly reflecting mirror is desired for a short time. A reflectivity of 92 per cent. at $0{\cdot}7\mu$ was obtained with this compound. The zinc-aluminium alloy has a minimum reflectivity at $0{\cdot}9\mu$. An examination of the reflectivity of pure zinc revealed a similar reflectivity minimum at $0{\cdot}1\mu$.

IN a paper on "The Development of the Atomic Theory," by A. N. Meldrum, of the Bombay University, published by the Oxford University Press, a plea is put forward that historical questions should be made the subject of serious investigation and discussion, and should be taught in the universities by those who have given special attention to them. The paper is devoted very largely to vindicating the view that the atomic theory was not originated as a pure novelty by Dalton, but was a legitimate development of Newton's views. Attention is directed to the importance of Newton's theory of the repulsion of gaseous particles in the theoretical views of Bryan Higgins, William Higgins, and Dalton. Thus Bryan Higgins suggested that ammonia and hydrogen chloride must unite particle with particle, and in no other way, since if two particles of ammonia attempted to combine with a single particle of acid, one of them would be driven away from the acid by the mutual repulsion of the two particles of ammonia. William Higgins, for the same reason, assumed that, since like atoms repel one another, the most stable combination of dissimilar atoms is in the ratio 1:1, then 2:1, and then 3:1. This view did not attract so much attention as it deserved, but was identical with the method used by Dalton in deducing the formulæ of compounds. It is suggested that Dalton did not necessarily borrow his views from Higgins, but that both workers, starting from Newton's doctrine of an elastic fluid composed of mutually repulsive particles, followed much the same train of thought and reached essentially the same conclusions.

PROF. AIMÉ WITZ, professor of physics at Lille University, contributes a well-reasoned article on heat economy to the issue of the *Revue générale des Sciences* for March 15. He reviews in turn the merits of steam-engine and turbine plants, internal-combustion engines, and electric power distribution from the point of view of thermodynamic efficiency. As regards the reciprocating steam engine, he counsels caution in the replacement of this method of heat utilisation by turbo-electric plants in small works, and cites figures to show that the *generic* efficiency of the former may be extremely favourable under certain conditions. Much progress has been effected in recent years in the design of exhaust steam turbines, and in certain cases it may be very desirable to run a low-pressure turbine off the large cylinder of a multiple expansion steam engine of the reciprocating type, and thus effect a better yield per pound of steam expended. On the wider (national) question the author devotes considerable space to the subject of the gasification of coal at the place of production and its direct utilisation for power purposes, with the recovery of by-products, the gas generated being used for running large gas engines, and the heavy residual oils for internal-combustion engines of the Diesel type. In this connection he gives some figures showing the very satisfactory results obtained at certain mines in France from installations run from coke-oven gas, supplemented by steam units, for power purposes. Finally, he reviews the claims for a national electric network, comprising a number of single and self-governing units combined to meet all the possible demands of industry. The paper is well worthy of study by all who are interested in the better utilisation of our fuel resources.